In the Claims:

Please a amend claim 36 and add new claim 68 as indicated in the following listing of the entire claims in the application.

1-35. (canceled)

36. (currently amended) A biological *in vitro* joint construct having a joint side and an opposed anchor side, comprising ~~at least one~~ a first biocompatible carrier material ~~having a~~ of the joint side ~~firmly~~ interlockingly connected *in vitro* to a second biocompatible material of the [[an]] anchor side; said joint side comprising cultured chondrocytes and/or chondroblasts and cartilaginous substance, and said anchor side consisting essentially of cultured osteoblasts and/or osteocytes and bone substance.

37. (Previously presented) The biological joint construct as claimed in claim 36, characterized in that the osseous tissue comprises, for the improvement of angiogenesis, a growth factor protein, endothelial cells or their precursor cells, or cells transfected with a growth factor gene.

38. (Previously presented) The biological joint construct as claimed in claim 36, characterized in that the anchor side has at least one cylindrical peg which can be connected to the bone shaft.

39. (Previously presented) The biological joint construct as claimed in claim 36, characterized in that it additionally comprises at least one ligamentous component, which can connect the two joint parts functionally to one another.

40. (Cancel)

41. (Previously presented) The biological joint construct of claim 36, having a circular cross section.

42. (Previously presented) A biological joint replacement, characterized in that at least two joint constructs as claimed in claim 38 have contact with one another with their joint sides and can be anchored with the anchor sides in two different bone shafts.

43. (Previously presented) The biological joint replacement as claimed in claim 42, characterized in that at least two joint constructs are connected by at least two ligamentous components.

44. (Previously presented) The biological joint replacement as claimed in claim 42, characterized in that it has a joint capsule.

45. (Withdrawn) A process for the production of a biological joint construct as claimed in claim 36, which comprises the following steps:

a) production of a bone component by populating a biocompatible carrier material with osteoblasts;

b) production of a cartilaginous component by preparation of a suspension of chondrocytes in a medium or gel or by population of the biocompatible carrier substance with chondrocytes;

c) connection of the osseous and the cartilaginous component such that the carrier material is integrated into the cartilage;

d) culture of the construct in vitro, a biological crosslinkage of the combined components being achieved by stimulation of the cells to attachment and to the synthesis of their tissue-specific extracellular matrix.

46. (Withdrawn) The process as claimed in claim 45, characterized in that the carrier material of the bone component (a) is shaped such that it has a joint side for the acceptance of a cartilage surface and an anchor side for connection to a bone.

47. (Withdrawn) The process as claimed in claim 45, characterized in that, for the production of the cartilaginous component (b)

aa) chondrocytes are suspended in the thrombin component of a fibrin adhesive,

bb) this suspension is mixed with the fibrinogen component of the fibrin adhesive,

cc) the mixture is brought into an anatomically desired shape.

48. (Withdrawn) The process as claimed in claim 46, characterized in that the bone component (a) and the cartilaginous component (b) are cultured separately in vitro before connection.

49. (Withdrawn) The process as claimed in claim 48, characterized in that the connection (c) of bone component and cartilaginous component is carried out by means of fibrin adhesion.

50. (Withdrawn) The process as claimed in claim 47, characterized in that during the solidification of the fibrin adhesive in the production of the cartilaginous component the carrier material, which is still not populated by osteoblasts, of the bone component is pressed into the cartilaginous layer such that it is firmly bound and,
in that later the population of the bone component is carried out by means of osteoblasts.

51. (Withdrawn) The process as claimed in claim 45, characterized in that it furthermore comprises the production of a ligamentous component made of fibrous materials and fibroblasts.

52. (Withdrawn) The process as claimed in claim 45, characterized in that it furthermore comprises the production of a capsular component made of fibrous, membranous materials and fibroblasts.

53. (Withdrawn) The process as claimed in claim 45, characterized in that at least one ligament connection site for the attachment of joint ligaments is attached to the carrier material of the bone component.

54. (Withdrawn) The process as claimed in claim 45, characterized in that at least one capsule connecting area is attached to the carrier material of the bone component for attachment of a joint capsule.

55. (Withdrawn) The process as claimed in claim 45, characterized in that at least one ligament component is attached to a ligament connection site of the bone component.

56. (Withdrawn) The process as claimed in claim 45, characterized in that at least one capsule component is attached to a capsule connection area of the bone component.

57. (Withdrawn) The process as claimed in claim 45, characterized in that endothelial cells, a growth factor protein, or cells transfected with a growth factor gene are added to the bone component.

58. (Withdrawn) The process as claimed in claim 45 for the preparation of osseous tissue (c), characterized in that spongiosa is used as a carrier material.

59. (Withdrawn) The process as claimed in claim 58, characterized in that autoclaved, human, allogenic spongiosa is used as a carrier material.

60. (Withdrawn) The process as claimed in claim 45 for the preparation of bone tissue, which comprises the following steps:

a) isolation of bone cells or bone precursor cells;

b) transfection of the cells by nonviral gene transfer using at least one gene which codes for a growth factor;

c) population of a biocompatible carrier material with the transfected cells;

d) culture of the cell-carrier material constructs in vitro.

61. (Withdrawn) The process as claimed in claim 60, characterized in that the isolated cells are proliferated before transfection.

62. (Withdrawn) The process as claimed in claim 60, characterized in that the transfection is carried out by lipofection.

63. (Withdrawn) The process as claimed in claim 60, characterized in that the transfection is transient.

64. (Withdrawn) The process as claimed in claim 60, characterized in that the transfected gene or at least one of the transfected genes codes for a growth factor which is selected from the following group: EGF, bFGF, VEGF, BMP-1 to BMP-20, TGF-β, PDGF-AA, PDGF-AB, PDGF-BB, Ang I, Ang II.

65. (Withdrawn) The process as claimed in claim 60, characterized in that the biocompatible carrier material is also populated with nontransfected cells.

66. (Withdrawn) The process as claimed in claim 60, characterized in that the isolated cells are stromal cells.

67. (Previously presented) The biological joint construct of claim 36, having an oval, triangular, polygonal, quadrangular, or rectangular cross section.

68. (new) The biological construct of claim 36, wherein the first biocompatible carrier material and the second biocompatible material are interlockingly connected in vitro by fibrin adhesion.